





# **SOUND LEVELS DUE TO ROAD TRAFFIC**

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**Ministry of  
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# Sound Levels due to Road Traffic

## Publication NPC-206

October 1995

*This Publication describes the methods to determine the equivalent sound level produced by road traffic. It replaces Publication NPC-106 "Sound Levels of Road Traffic" of the "Model Municipal Noise Control By-Law, Final Report, August 1978".*

### 1. SCOPE

This Publication describes the methods to determine the One Hour Equivalent Sound Level ( $L_{eq}$ ) of sound caused by road traffic. The road traffic sound level is used to define sound level limits for the purposes of complaint investigation or approval of stationary sources of sound.

The methods apply at a point of reception in any community where the background sound level is dominated by the sound of road traffic, referred to as "urban hum". Highly intrusive short duration noise caused by a source such as an aircraft fly-over or a train pass-by is excluded from the determination of this background sound level.

### 2. REFERENCES

Reference is made to the following publications:

- [1] NPC-101 - Technical Definitions
- [2] NPC-102 - Instrumentation
- [3] NPC-103 - Procedures
- [5] NPC-205 - Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)
- [11] ORNAMENT, Ontario Road Noise Analysis Method for Environment and Transportation, Technical Document, Ontario Ministry of the Environment, ISBN 0-7729-6376, 1989

References [1] to [3] can be found in the  
Model Municipal Noise Control By-Law, Ontario Ministry of the Environment, Final Report, August 1978.

### 3. TECHNICAL DEFINITIONS

"Ambient sound level"  
means Background sound level;

"Background sound level"  
is the sound level that is present in the environment, produced by noise sources other than the source under impact assessment. Highly intrusive short duration noise caused by a source such as an aircraft fly-over or a train pass-by is excluded from the determination of the background sound level;

Other technical terms are defined in Reference [1].

### 4. SOUND LEVELS DUE TO ROAD TRAFFIC

Depending on the application, the One Hour Equivalent Sound Level ( $L_{eq}$ ) of road traffic shall be obtained either by measurement or by calculation. The following procedures shall be used for complaint investigation and for the approval of stationary sources:

**(1) Complaint Investigation of Stationary Sources**

The One Hour Equivalent Sound Level ( $L_{eq}$ ) of road traffic may be measured or calculated. Measurements of the One Hour Equivalent Sound Level ( $L_{eq}$ ) of road traffic shall be carried out using instrumentation described in Reference [2], following procedures for the measurement of varying sound described in Reference [3].

The results of the road traffic  $L_{eq}$  measurements must not be affected by the sound due to other noise sources; the measurements should be performed when the stationary source under impact assessment is not operating. The time interval between the road traffic  $L_{eq}$  measurements and the measurement of the sound level produced by the stationary source under impact assessment should be minimized as much as possible. Preferably, the two measurements should be carried out within one hour of each other.

The calculation of the One Hour Equivalent Sound Level ( $L_{eq}$ ) of road traffic shall be based on the traffic flows observed on the contributing road(s), from which traffic noise is audible at the point of reception, within one hour of the period when the sound from the stationary source is measured. The calculation procedure is described in Reference [11].

**(2) Approval of Stationary Sources**

Measurements of the One Hour Equivalent Sound Level ( $L_{eq}$ ) of road traffic shall be carried out following procedures for the measurement of varying sound described in Reference [3].

Results of the measurement of the One Hour Equivalent Sound Level ( $L_{eq}$ ) of road traffic shall reflect the principle of "predictable worst case" noise impact. The "predictable worst case" noise impact occurs during the hour when the difference between the sound level produced by the stationary source under impact assessment and the sound level due to road traffic is largest.

The One Hour Equivalent Sound Level ( $L_{eq}$ ) of road traffic may be calculated on the basis of traffic flows observed on the contributing road(s), from which traffic noise is audible at the point of reception. The results of calculation of the One Hour Equivalent Sound Level ( $L_{eq}$ ) of road traffic shall reflect the principle of "predictable worst case" noise impact. The calculation procedure is described in Reference [11].



